

REMARKS

Pending Claims

Claims 1-24 are pending in this application, claim 25 having been cancelled herein without prejudice. Amendments have been made to the claims to correct antecedent bases concerns and to correct the form of the dependent claims. No new matter has been added by way of any of these amendments. Reconsideration is respectfully requested.

In the Specification

The specification has been amended to add headings as suggested by the Examiner. Further, the Abstract is submitted herewith on a separate sheet.

Rejections Under 35 U.S.C. § 103

The Office Action rejected claims 1-24 under 35 U.S.C. § 103 as obvious over Saunders et al. in view of Olesen. Independent claim 1 as been amended to more clearly define and describe the invention and to distinguish it from the cited reference(s). It is respectfully submitted that the claims are not obvious and are in condition for allowance.

More particularly, independent claim 1, inter alia, requires that “some of said filaments are coupled together in a fixed phase relationship to form a group of filaments,” and also that “said weighing circuit is operable to apply a common variable phase adjustment to signals passed to and/or from the filaments of the group.” Thus, although the filaments of the group have a fixed phase relationship, they are, nevertheless, subject to a common variable phase adjustment applied by the weighting circuit under control of the antenna control means.

Neither of the references relied upon in the rejection discloses, or suggests, this combination of features. As stated by the Examiner in paragraph 7 of the Office Action, Saunders et al does not disclose the feature that some of said filaments are “coupled together in a fixed phase relationship” to form a group of filaments, as is specifically required in amended claim 1. Olsen et al. on the other hand, simply disclosed a PIN diode structure which functions as a switching device to selectively alter the electrical length of the antenna elements. This citation does not disclose or suggest any form of weighting circuit for applying variable phase adjustments to signals passed to and/or from the antenna filaments.

The claimed antenna leads to a simplification of the antenna circuitry, with associated cost savings. The inventors fully expected that the claimed antenna would have serious shortcomings because, they thought, the partial removal of phase adjustments by grouping filaments would compromise the operation performance of the antenna, reducing adaptivity. Much to their surprise, however, the inventors discovered that partial removal of phase adjustment had very little adverse effect on operational performance and, in fact, in some operation situations, actually gives rise to improved operational performance. This is demonstrated by Figure 7 of the specification in which the diversity gain of an antenna having two bifilars is significantly greater at large object distances (where signals are not significantly decorrelated) as compared with the diversity gain of an antenna having four uncoupled filaments. Such improvements were entirely unexpected.

In summary, the subject invention enables cost savings to be made and yet, contrary to expectation, does not suffer from a significant reduction of operational performance, and in some operation situations gives rise to improved performance. In view of this, the applicants

In re Appln. of Saunders et al.
Application No. 10/070,469

submit that the amended claims are patentably distinguished from the citations and should now be allowed.

Conclusion

The application is considered in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,

A handwritten signature in cursive script, reading "Pamela J. Ruschau", is written over a horizontal line.

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Amendment or ROA - Regular (Revised 7/29/03)